

REMARKS

This responds to the Office Action mailed on November 15, 2005, and the references cited therewith.

Claims 1, 4, 5, 6, 9, 10, 11, 17, 28, 40 and 46 are amended, claim 7 is canceled, and no claims are added; as a result, claims 1-6 and 8-50 are now pending in this application.

Information Disclosure Statement

Applicant submitted an Information Disclosure Statement and a 1449 Form. The Examiner indicates that the documents are classified in unrelated classes and appear to be unrelated. The Applicant has not reviewed these documents and defers to the expertise of the Examiner as it appears that he has reviewed the documents to some extent. However, Applicant respectfully requests that initialed copies of the 1449 Forms be returned to Applicant's Representatives to indicate that the cited references have been considered by the Examiner.

§112 Rejection of the Claims

Claims 4-7, 10-11, 17 and 28 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

With regard to claim 4, the Office Action states that it is unclear how the first wet etch could be selected from a "...*wet process and a vapor process* ...". Applicant notes that the first etch is used to "... *expose a first portion of the conductive structure*...", which Applicant submits is the layer 140 and part of layer 138, as shown in figure 1. As noted at least on page 11, lines 18-23 and page 21, line 7, there maybe a "plasma vapor first etch" for the sacrificial second film 140. Thus, the use of the claim language of a "...*first wet etching to expose a first portion of the conductive structure* ...", as found in claim 1, from which claim 4 directly depends, would be understood to by one of ordinary skill to include various well known forms of vapor etching in addition to the liquid chemical etches. Therefore, Applicant respectfully submits that the language of claim 4 would be understood by one of ordinary skill in the art, and is thus distinctly claimed.

Claims 4-6, 10-11, 17 and 28 have been amended as indicated in the Office Action, and claim 7 has been cancelled without prejudice. In view of the above discussion and claim amendments, Applicant requests that this rejection be withdrawn.

§102 Rejection of the Claims

Claims 46-50 were rejected under 35 U.S.C. § 102(e) for anticipation by Kang et al. (U.S. Publication No. 2004/0175884 A1). Applicant respectfully traverses this rejection.

The cited reference of Kang discloses forming capacitors having a larger diameter at a bottom portion of the capacitor than a diameter at a middle portion of the capacitor by “forming a recessed portion at side surface of the second contact hole” (see paragraphs 19 and 41). This is done by performing two contact etches to under cut the dielectric layer 200 to create the recessed portion, as shown in figures 3D-3F, and discussed at paragraphs 39 to 44.

Applicant respectfully submits that there is no disclosure or suggestion in the cited reference regarding the verticality of the capacitor walls, and the cited reference further shows the side walls of the capacitor having a decidedly non-vertical slope and including a number of horizontal portions (i.e., the region “A” as shown in figure 3H and discussed at least at paragraph 46). Therefore, Applicant submits that the cited reference does not disclose a feature of “...wherein the conductive structure has substantially vertical sidewalls ...”, as recited in independent claim 46, as amended herein. The present application discusses the near vertical or substantially vertical sidewalls at least at page 1, line 25; page 2, lines 6-11, page 5, line 31; page 7, line 30; page 8, lines 2-7; page 26, line 15 and page 31, line 2.

The dependent claims 47-50 directly depend from claim 46, and are believed to be patentably distinct over the cited reference of Kang at least as depending upon a base claim shown above to be patentable. In view of the above discussed claim amendment, Applicant requests that this rejection be reconsidered and withdrawn.

§103 Rejection of the Claims

Claim 50 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kang et al. (U.S. Publication No. 2004/0175884 A1). Applicant respectfully traverses this rejection.

Applicant respectfully submits that the above discussion of the Kang disclosure shows that there is no suggestion regarding the “...*substantially vertical sidewalls* ...”, as recited in claim 46, from which claim 50 directly depends. Thus, one of ordinary skill in the art would not be motivated to perform the extra steps of the claimed invention to obtain the more vertical sidewalls, when reading the cited reference. Thus independent claim 46 is believed to be non-obvious over the cited reference, and dependent claim 50 is therefore also patentably distinct. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Claims 40-45 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kang et al. in view of Jost et al. (U.S. 5,966,611). Applicant respectfully traverses this rejection.

The cited reference of Kang has features that have been discussed in the two preceding rejections. The cited reference of Jost is used in the outstanding Office Action to show that when exposing polysilicon structure by removing a sacrificial layer, that the sacrificial layer may comprise either an organic material (such as amorphous carbon) or an inorganic material (such as silicon oxide).

Applicant respectfully submits that the cited Jost reference does nothing to cure the above noted failure of the Kang reference to suggest vertical sidewalls, and thus the suggested combination of reference can neither describe nor suggest at least the claimed feature of “...a conductive structure embedded therein having substantially vertical sidewalls ...”, as recited in claim 40, as amended herein.

Dependent claims 41-45 depend directly from claim 40, and are believed to be patentable over the suggested combination of cited references, at least as depending upon a base claim shown above to be patentable over the suggested combination. In view of the above discussion, Applicant requests that this rejection be reconsidered and withdrawn.

Claims 1-39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kang et al. in view of Jost et al. and O'Brien (U.S. 5,817,182). Applicant respectfully traverses this rejection.

The cited references of Kang and Jost have been discussed above. The cited reference of O'Brien is used in the outstanding Office Action to show that rinsing after etching in order to

remove etchant residues that may impact subsequent processing, device yield or reliability is known in the art.

Applicant respectfully submits that the suggested combination of references neither describe nor suggest at least the claimed features of “...*forming a conductive structure in the first recess having substantially vertical sidewalls* ...”, as recited in claims 1 and 9, from which claims 2-8 and 10-21 depend. The reasons are similar to those noted above with reference to the prior rejections, specifically that the suggested combination of references fails to suggest the conductive structure having vertical walls, and showing clearly non-vertical walls in all cases.

The dependent claims are held to be in patentable condition at least as depending from base claims shown above to be patentable over the suggested combination of references.

Applicant respectfully submits that the suggested combination of references neither describe nor suggest at least the claimed features of “...*wherein second etching includes a second etch rate that is slower than the first etch rate* ...”, as recited in claims 22 and 29, from which claims 23-28 and 30-39 depend. Applicant can not find any suggestion in the cited references that the second etch should be slower than the first etch rate, and further there is no motivation given in the cited references to make the suggested changes.

The dependent claims are held to be in patentable condition at least as depending from base claims shown above to be patentable over the suggested combination of references. In view of the above noted claim amendments and discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Reservation of the Right to Swear Behind References

Applicant maintains its right to swear behind any documents which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a), and 103/102(e). Statements distinguishing the claimed subject matter over the cited documents are not to be interpreted as admissions that the documents are prior art.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney David Suhl at (508) 865-8211, or the undersigned attorney at (612) 349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

KEVIN TOREK ET AL.

By their Representatives,

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Date

9 Jan '06

By



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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 9 day of January, 2006.

Kate Cannon

Name



Signature